



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,136	02/27/2002	John C. Vellinger	10561.117936	5064

7590 06/22/2004

Robert H. Eichenberger  
Frost Brown Todd LLC  
Suite 400  
120 West Spring Street  
New Albany, IN 47150

EXAMINER

SORKIN, DAVID L

ART UNIT	PAPER NUMBER
----------	--------------

1723

DATE MAILED: 06/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/084,136	Applicant(s) VELLINGER ET AL.	
	Examiner David L. Sorkin	Art Unit 1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 21-36, 42 and 43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20, 37-41 and 44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 1-20, 37-41 and 44 in the response filed 12 April 2004 is acknowledged.

***Failure to Comply with 37 CFR 1.121(c)***

2. Applicant is reminded that amendment of the claims requires a complete listing of the text of all pending claims including withdrawn claims. Any future amendment or proposed amendment must comply with 37 CFR 1.121.

***Claim Objections***

3. Claim 19 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. See MPEP 608.01(n)(II & III) where it is stated that "Any claim which is in dependent form but which is so worded that it, in fact is not, as, for example, it does not include every limitation of the claim on which it depends, will be required to be *canceled* as not being a proper dependent claim" (emphasis in MPEP). Instant claim 19 is so phrased as if it only requires the container of the parent claim, rather than all the limitations of the apparatus (including the impeller and driver) of the parent claim. It is suggested that in line 1 of the claim, "liquid sample container of Claim 16" be changed to - - apparatus of Claim 16 - -.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

Art Unit: 1723

art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-20 and 37-41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. These claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention:

Independent claims 1 and 37 have been amended to include the new recitation "capable of operating with a single coil". While the effect of this recitation upon the scope of the claims is unclear, as discussed regarding section 112, second paragraph below, applicant has pointed out no support from this new recitation. The examiner finds no discussion in the originally filed specification of the concept of the driver "operating with as single coil".

Claims 8 and 9 are further considered to be not supported by the original disclosure for the following reason. While, the specification describes a magnetic impeller rotatably mounted on an axle, such an apparatus is not disclosed in combination with the new requirement of independent claim 1, "imparts axial motion to said magnetic impeller".

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-20 and 37-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Independent claims 1 and 37 have been

amended to include the recitation "electromagnetic driver capable of operating with a single coil" (new portion underlined). While one of ordinary skill in the art would be able to determine if a given electromagnetic driver does or does not consist of a single coil, the phrase "capable of operating with a single coil" is too vague to permit one of ordinary skill in the art to reasonably determine if a given driver is or is not within the scope of the claims. It is unclear if the coil is something which is not part of the driver, but with which the driver is used, or if the coil is an element of the driver. The lack of discussion of a single coil in the disclosure makes it all the more impossible to determine the scope of these claims. Also, it is unclear if applicant means "a single coil" as a single series of loops, or a single loop. Applicant is requested to state on the record whether the embodiments of Figs. 4 and 6 which involve multiple coils are within the scope of claims 1-20 and 37-41.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Ullman (US 5,120,135). Regarding claim 1, Ullman ('135) discloses an apparatus for mixing liquids comprising a liquid sample container (12) a submerged magnetic impeller (18); and an electromagnetic driver (32, for example) capable of operating with a single coil located in proximity to said magnetic impeller wherein said electromagnetic driver

imparts axial motion to said magnetic impeller (see col. 3, line 8) and is powered by a signal generator (it is considered the term "electromagnet" used by the reference, for example at col. 7, line 32; inherently discloses being powered by an electric signal generator). Regarding claim 2, said magnetic impeller has a magnetic field coupled to an electromagnetic field of said electromagnetic driver (see col. 7, lines 1-3 and 32-33).

10. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Landa et al. (US 5,078,504). Regarding claim 1, Landa ('504) discloses an apparatus for mixing liquids comprising a liquid sample container (10) a submerged magnetic impeller (28); and an electromagnetic driver (30) capable of operating with a single coil located in proximity to said magnetic impeller wherein said electromagnetic driver imparts axial motion to said magnetic impeller (see Fig. 2; col. 5, lines 11-15) and is powered by a signal generator (it is considered the term "electromagnetic driver" used by the reference, for example at col. 5, line 13; inherently discloses being powered by an electric signal generator; see also the symbolically-depicted alternating current generator depicted in Fig. 3). Regarding claim 2, said magnetic impeller has a magnetic field coupled to an electromagnetic field of said electromagnetic driver (see col. 5, lines 13; Fig. 2).

11. Claims 37-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Sanderson et al. (US 4,199,265). Regarding claim 37, Sanderson ('265) discloses a system for mixing liquids comprising a liquid sample within a sample container (22); a magnetic impeller (24) located within said liquid sample container; and a programmable electronic driver (26,28,32,33,24,36 or a subset thereof) capable of operating with a

single coil located in proximity to said magnetic impeller and electrically coupled to a signal generator that receives electrical power from a power supply (120,122) and commands from an electronic controller wherein said electronic controller produces a conditioned electronic signal established by an output computer (see Figs. 5 and 7; col. 5, lines 14-29 and cols. 7 and 8). Regarding claim 38 said conditioned electronic signal is produced by means of one or more algorithms programmed into said computer (See col. 5, lines 14-29 and cols. 7 and 8). Regarding claims 39-41, while the reference discloses that an algorithm may receive input in the form of viscosity or other variables (see col. 5, lines 26-29), it is considered that the nature of information provided to the claimed device is a matter of intended use, not structure. As held in *In re Casey*, 152 USPQ 235 (CCPA 1967) "the manner or method in which such machine is to be utilized is not germane to the issue of patentability of the machine itself". Also, "apparatus claims cover what a device is, not what a device does" (emphasis in original) *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

12. Claims 1-6, 10, 12, 16 and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by Lu et al. (US 3,680,843). Regarding claim 1, Lu ('843) discloses an apparatus for mixing liquids comprising a liquid container (2); a magnetic impeller (4) located in said sample container; and an electromagnetic driver (6,8,10) capable of operating with a single coil (see drawing) located in proximity to said magnetic impeller wherein said electromagnetic driver is powered by a signal generator (7). Regarding the recitation "imparts axial motion to said magnetic impeller" is not disclosed word-for-word in the reference; however, it is considered that the reference implicitly and/or

intrinsically discloses that the electromagnetic driver (6,8,10) capable imparting such motion upon the impeller. The depiction of the magnet pellet (4) in the drawing being levitated above the bottom surface of the container (2), in the same plane as the fingers (10) of pole pieces (8), would have conveyed to one of ordinary skill in the art that the electromagnetic driver is capable of imparting axial motion on the magnetic impeller (4). Regarding claim 2, said magnetic impeller has a magnetic field coupled to an electromagnetic field of said electromagnetic driver (see col. 2, lines 13-30). Regarding claim 3, said signal generator produces a signal of programmed frequency and current (see col. 2, lines 31-36 and col. 3, lines 11-13). Regarding claim 4, said signal generator causes said electromagnetic field of said electromagnetic driver to vary with time (see col. 3, lines 11-13). Regarding claim 5, said electromagnetic driver imparts motion in multiple directions to said magnetic impeller in said liquid sample as a result of a coupled electromagnetic field (see col. 2, lines 45-53). Regarding claim 6, said motion of said magnetic impeller transfers momentum radially and axially through said liquid sample (see col. 2, lines 52-55). Regarding claim 10, the electromagnetic driver has no moving parts (see col. 2, lines 55-56). Regarding claim 12, the frequency and current of the programmed signal is controlled by an operator (see col. 2, lines 31-35). Regarding claim 16, a plurality of vessels are arranged in a geometric array (see drawing). Regarding claim 44, Lu ('843) discloses an apparatus comprising a liquid sample container comprising a plurality of vessels (2) arranged in a geometric array (see drawing); a permanent magnetic impeller (4) located in said liquid sample container; an electromagnetic driver (6,8,10) having an electromagnetic field associated



Art Unit: 1723

therewith, said electromagnetic driver located in proximity to said permanent magnetic impeller wherein said electromagnetic driver comprises no moving mechanical parts; and a signal generator (7) electrically coupled to said driver wherein said signal generator produces a signal of programmed frequency and current which causes said electromagnetic field of said electromagnetic driver to vary with time (see col. 2, lines 31-36 and col. 3, lines 11-13), thus imparting motion to said permanent magnetic impeller in said liquid sample as a result of a coupled electromagnetic field between said permanent magnetic impeller and said electromagnetic driver (see col. 2, lines 45-53), wherein said frequency and current of said program signal is controlled by an operator (see col. 2, lines 31-36 and col. 3, lines 11-13). Lu ('843) does not state word-for-word that the electromagnetic drive imparts *axial* motion to said permanent magnetic impeller; however, it is considered that the reference implicitly and/or intrinsically discloses that the electromagnetic driver (6,8,10) capable imparting such motion upon the impeller. The depiction of the magnet pellet (4) in the drawing being levitated above the bottom surface of the container (2), in the same plane as the fingers (10) of pole pieces (8), would have conveyed to one of ordinary skill in the art that the electromagnetic driver is capable of imparting axial motion on the magnetic impeller (4).

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 7, 11, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu et al. (US 3,680,843) in view of Sanderson et al. (US 4,199,265). Regarding claim 7, Lu ('843) does not disclose "random" motion of the impeller. Sanderson ('265) teaches imparting random motion upon an impeller of a magnetic stirrer (see col. 4, lines 9-11). It is considered that it would have been obvious to one of ordinary skill in the art to have provided the impeller with random motion as taught by Sanderson ('265), because Sanderson ('265) presents such motion as a beneficial alternative to "merely rotating" (see col. 4, lines 9-11). Regarding claim 11, Lu ('843) does not disclose that the signal is controlled by computer implemented algorithm. Sanderson ('265) teaches controlling a signal for a magnetic stirrer by computer implemented algorithm (see cols. 7 and 8). It is considered that it would have been obvious to one of ordinary skill in the art to have controlled that signal of Lu ('843) by computer implemented algorithm as taught by Sanderson ('265) to achieve improved control over stirring (see col. 1, lines 36-41; cols. 7 and 8). Regarding claims 13 and 14, said signal generator produces a wave form selected from the group consisting of sinusoidal waver, square wave, and sawtooth waves (see Figs. 6 and 8).

15. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lu ('843). Lu ('843) does not disclose a numerical value for the size of the container; however, it is considered within the skill of one of ordinary skill in the art to select the size of a sample container to suit the size of the sample needing to be stirred.

16. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lu et al. (US 3,680,843) in view of Cleveland et al. (US 6,357,907). The apparatus of Lu

('843) was discussed above regarding claim 16. While Lu ('843) that a purpose of the invention is to "provide a magnetic mixer in which a multiplicity of liquid sample containers can be mixed simultaneously", it is not explicitly stated the apparatus comprises 24 containers, 96 containers or is circularly arranged containers. Cleveland ('907) teaches magnetic mixing of 24 containers, 96 containers and circularly arranged containers (see col. 1, lines 5-16; Fig. 1). It is considered that it would have been obvious to one of ordinary skill in the art to have provided the apparatus of Lu ('843) with the containers of Cleveland ('907), because Cleveland ('907) explains that these containers are "commonly used in a wide variety of scientific applications".

#### ***Response to Arguments***

17. Applicant's arguments relating to MacMichael et al. (US 4,759,635) are moot as the reference is not relied upon to reject the current claims. Nonetheless, applicant is incorrect in stating that the reference involves rotation about a horizontal axis. Rotation is about a vertical axis, perpendicular to the horizontal liquid surface (see col. 2, lines 15-19; drawings).

18. Applicant argues regarding Lu ('843) that the electromagnetic driver is intended to impart axial motion. As explained in the body of the rejection above, it is considered that the reference implicitly and/or intrinsically discloses that the driver is capable of imparting such motion.

19. Applicant argues that device Sanderson ('265) is not consistent with the recitation "capable of operating with a single coil"; however, under at least some

interpretations of this indefinite limitation, it is considered that a driver of Sanderson ('265) is so capable.

20. Applicant's arguments relating to Tatevosian et al. (US 4,720,025) are moot as the reference is not relied upon to reject the current claims.

### ***Conclusion***

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

22. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

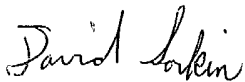
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Sorkin whose telephone number is 571-272-1148. The examiner can normally be reached on 9:00 -5:30 Mon.-Fri..

Art Unit: 1723

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David L. Sorkin  
Examiner  
Art Unit 1723

David Sorkin